

# In the United States Patent and Trademark Office

Application No.: Not assigned  
 Filed: Filed herewith  
 Title: Electrokinetic Instability Micromixer  
 Applicant(s): Juan G. Santiago et al.  
 Examiner: Not assigned  
 Art Unit: Not assigned



Mailed Jan. 24, 02  
 Santa Clara, CA

## Information Disclosure Statement

Commissioner of Patents and Trademarks  
 Washington, District of Columbia 20231

Dear Sir or Madam:

Attached is a completed Form PTO-1449 and copies of the pertinent parts of the references cited thereon. It is requested that the document(s) on the enclosed form be made of record.

### Part I (Authority)

This statement is filed pursuant to:

(X) 37 C.F.R. § 1.97(b).

This information disclosure statement is filed either (1) within three months of the filing date of the national applications; (2) within three months of the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application; or (3) before the mailing date of a first office action on the merits, whichever event occurs last. Accordingly, this information disclosure statement requires no fee and no certification.

( ) 37 C.F.R. § 1.97(c).

This information disclosure statement is filed after the period specified in 37 C.F.R. § 1.97(b), but before the mailing date of either (1) a final action under 37 C.F.R. § 1.113 or (2) a notice of allowance under 37 C.F.R. § 1.311. Accordingly, this information disclosure statement requires either the fee specified in 37 C.F.R. § 1.17(p) for submission of an information disclosure statement under 37 C.F.R. § 1.97(c) (\$180), or a certification according to 37 C.F.R. § 1.97(e).

( ) 37 C.F.R. § 1.97(d).

This information disclosure statement is filed after the period specified in 37 C.F.R. § 1.97(c). Accordingly, this information disclosure statement requires the petition fee specified in 37 C.F.R. § 1.17(p) to consider an information disclosure statement under 37 C.F.R. § 1.97(d) (\$180), a certification according to 37 C.F.R. § 1.97(e), and a petition requesting consideration of the information disclosure statement.

### Conditional Petition

It is respectfully requested that this information disclosure statement be considered, good cause being presented in Part III herein (certification). please treat this paper as the required petition.

If this statement crosses in the mail with an office action, or is otherwise not in the indicated category of 37 C.F.R. § 1.97, it is respectfully requested that this statement be treated in the next appropriate category and made of record.

To the extent required, please treat this paper as a conditional petition for acceptance of the information disclosure statement.

## Part II (Payment)

A check is enclosed as indicated:

- ☒ ( X ) No fee is due.
- ☐ ( ) The fee specified in 37 C.F.R. § 1.17(p) for submission of an information disclosure statement under 37 C.F.R. § 1.97(c) is enclosed (\$240).
- ☐ ( ) The petition fee specified in 37 C.F.R. § 1.17(i)(1) to consider an information disclosure statement under 37 C.F.R. § 1.97(d) is enclosed (\$130).

## Part III (Certification)

Pursuant to 37 C.F.R. § 1.97(e), I certify:

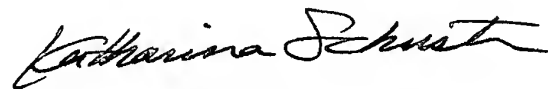
- ☒ ( X ) No certification is necessary.
- ☐ ( ) (1) Each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the statement.
- ☐ ( ) The "communication from a foreign patent office" referred to in the certification is an International Search Report, possibly issued by the U.S. Patent and Trademark Office in its capacity as an International Search Authority or International Preliminary Examining Authority.
- ☐ ( ) The "counterpart foreign application" referred to in the certification corresponds to an ancestor or descendent application of the application for which this information disclosure statement is filed.
- ☐ ( ) (2) No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c), more than three months prior to the filing of the statement.

## Part IV (Additional Statement)

An additional statement regarding these items of information ☐ ( ) is, ☒ ( X ) is not, enclosed.  
Copies of the cited art ☒ ( X ) are enclosed, ☐ ( ) are of record in parent application Serial No. \_\_\_\_\_ and will be provided if the Examiner deems it convenient.

Respectfully submitted,

Dated: Jan. 24, 2002



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FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE	ATTY. DOCKET NO. S00-009	SERIAL NO. Not assigned
LIST OF PRIOR ART CITED BY APPLICANT (Use several sheets if necessary)	APPLICANT Juan G. Santiago et al.	
	FILING DATE Filed herewith	GROUP Not assigned

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10/056944

01/24/02

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	6 2 8 7 4 4 0	9/11/01	Arnold et al.	204	450	6/18/99
	B	2 9 4 9 5 5 0	8/16/60	Thomas T. Brown et al.	310	5	7/3/57
	C	6 0 3 3 5 4 6	3/7/00	Ramsey	204	603	9/15/98
	D	6 0 4 6 0 5 6	4/4/00	Parce et al.	436	514	12/6/96
	E	6 0 8 2 8 9 1	7/4/00	Schubert et al.	366	338	4/17/98
	F	6 0 8 6 2 4 3	7/11/00	Paul et al.	366	273	10/1/98
	G	6 1 5 8 7 1 2	12/12/00	Ctaig	251	61.1	10/16/98
	H	6 1 7 6 9 6 2	1/23/01	Soane et al.	156	292	1/18/97
	I	6 1 7 4 6 7 5	1/16/01	Chow et al.	435	6	8/27/98
	J	6 2 1 0 9 8 6	4/3/01	Arnold et al.	438	42	9/23/99
	K	6 2 1 3 1 5 1	4/10/01	Jacobson et al.	137	827	4/25/00
	L	6 2 2 1 2 2 6	4/24/01	Kopf-Sill	204	602	10/7/99
	M	6 2 3 5 1 7 5	5/22/01	Dubrow et al.	204	453	10/2/98
	N	6 2 3 5 4 7 1	5/22/01	Knapp et al.	435	6	4/3/98
	O	6 2 4 1 3 7 9	6/5/01	Larsen	366	181.5	
	P	6 3 0 6 2 7 3	10/23/01	Wainright et al.	204	454	4/13/99
	Q	6 3 3 7 7 4 0	1/8/02	Parce	356	344	8/19/99

## FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	ISSUE DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
						YES NO

## OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

A	M. H. Oddy et al.; "Electrokinetic instability micromixing;" Analytical Chemistry, Vol. 73, No. 24, December 15, 2001, Pg. 5822-5832
B	J. G. Santiago; "Electroosmotic flows in microchannels with finite inertial and pressure forces;" Analytical Chemistry, Vol. 73, No. 10, May 15, 2001, Pg. 2353-2365
C	Yi-Kuen Lee et al.; "Chaotic mixing in electrokinetically and pressure driven micro flows;" The 14 <sup>th</sup> IEEE Workshop on MEMS Interlaken, Switzerland, Jan. 2001

D	Pavlo Takhistov et al.; "Electrokinetic displacement of air bubbles in microchannels;" January 29, 2001
E	Jorg P. Kutter; "Current developments in electrophoretic and chromatographic separation methods on microfabricated devices;" trends on analytical chemistry, vol. 19, no. 6, 2000
F	Robin H. Liu et al.; "Passive mixing in a three-dimensional serpentine microchannel;" JOURNAL OF MICROELECTROMECHANICAL SYSTEMS, VOL. 9. NO. 2, JUNE 2000
G	Giles HI WI Sanders et al.; "Chip-based microsystems for genomic and proteomic analysis;" trends on analytical chemistry, vol. 19, no. 6, 2000
H	Stephen C. Jacobson; "Microfluidic devices for electrokineticall parallel and serial mixing;" Analytical Chemistry, Vol. 71, No. 20, October 15, 1999, Pg. 4455-4459
I	M Koch et al.; "Two simple micromixers based on silicon;" J. Micomech. Microeng. 8 (1998) 123-126. Printed in the UK
J	Dorian Liepmann et al.; "Micro-fluidic mixer;" LIEPMANN D.; EVANS J. D. POLYM. MATER. SCI. ENG. PROC. ACS DIV. POLYM. MATER. SCI. ENG. 1997, 76, PP. 549-550 CITATION
K	Norbert Schwesinger et al.; "A modular microfluid system with an integrated micromixer;" J. Micomech. Microeng. 6 (1996) 99-102. Printed in the UK
L	J. Michael Ramsey et al.; "Microfabricated chemical measurement systems;" NATURE MEDICINE, VOLUME 1, NO. 10, OCTOBER 1995
M	M Elwenspoek; "Towards integrated microliquid handling systems;" J. Micomech. Microeng. 4 (1994) 227-245. Printed in the UK
N	J. M. Schneider et al.; "Electrohydrodynamic stability of space-charge-limited currents in dielectric liquids. I. Theoretical study;" THE PHYSICS OF FLUIDS, VOLUME 13, NUMBER 8, AUGUST 1970
0	J. R. Melcher et al.; "Electrohydrodynamics: a review of the role of interfacial shear stresses;" MELCHER. J. R. :TAYLER, G. I. ANNU. REV. FLUID MECH. 1969, I. 111-146
EXAMINER	
DATE CONSIDERED	

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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